

**Preliminary DRAFT Cedar Chinook Population - Tier 2 - Initial Habitat Project List**  
**Includes Potential Restoration and Protection Projects by Reach.**  
**Upper Cedar Reaches 19-28**

**\*\*NOTE:** These projects are based upon one year of fish habitat use data (2003). More information on fish distribution and habitat use is needed before many of these projects are moved forward. Protection projects are listed in the section for the entire upper Cedar River subarea and are not designated by reach.

**Basinwide Recommendations Unranked:**

| Project # | Description  |
|-----------|--|
| C603      | Pool habitat and the habitat features that support the creation of pool habitat (LWD, riparian function, and channel connectivity) should be maintained. |
| C604      | In the Upper Cedar River, protect LWD in the channel unless it poses a danger to dam operations.   |
| C605      | Protect high watershed function by maintaining forest cover, riparian cover and minimizing the amount of road crossings and impervious surface.          |
| C606      | Protect water quality to prevent adverse impacts to key life stages for fine sediments, metals, and high temperatures.                                   |

**Basinwide Recommendations Ranked:**

**Restoration**

**Technical Hypothesis:** Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.

| Project # | Reach # | Reach Restor. Benefit Rank | NTAA # | NTAA Name & Description  | Approx. Cost | Notes, Key Uncertainties  | Benefits to Chinook H, M, L | Feasibil. H, M, L |
|-----------|---------|----------------------------|--------|--|--------------|---|-----------------------------|-------------------|
| C607      | BW      | n/a                        | new    | <b>LWD Survey and LWD Addition Plan:</b> Wood has been removed from the upper Cedar River in the past to protect Landsburg Dam. However, in the past few years, wood that falls into the stream is left there and only removed if it moves downstream close to the dam. This project includes a survey of current LWD conditions, modeling expected wood recruitment levels over time, and development and implementation of a plan to add LWD to the river in prioritized locations. The LWD survey will be underway in fall of 2004. It is expected that the plan will be developed by late 2005 and wood addition will occur from 2006 to 2008. |              |   | <b>H</b>                    | <b>H</b>          |
| C608      | BW      | n/a                        | new    | <b>Riparian Enhancement:</b> Enhance riparian conditions through adding vegetation and conducting ecological thinning to advance the seral stage of the riparian forest to provide improved wood recruitment, riparian food sources, and cover.  |              | Ecological thinning is poorly understood by the environmental community, although it is an important action for encouraging the development of large trees in areas that have been previously logged and are dominated by dense, young forest stands. Benefits for Chinook from riparian enhancements would increase over time as the vegetation grows/matures. | <b>M/L</b>                  | <b>H</b>          |

**Protection**

**Technical Hypothesis:** *Protect high watershed function by maintaining forest cover, riparian cover and minimizing the amount of road crossings and impervious surface. Protect water quality to prevent adverse impacts to key life stages for fine sediments, metals, and high temperatures.*

| Reach # | Reach # | Reach Prot. Benefit Rank | Exist. Prot. Priority (Y/N) | NTAA # | Name & Description  | Approx. Cost | Notes, Key Uncertainties | Benefits to Chinook H, M, L | Feasibil. H, M, L |
|---------|---------|--------------------------|-----------------------------|--------|---|--------------|--------------------------|-----------------------------|-------------------|
| C609    | BW      | n/a                      |                             | new    | <b>Cedar River Watershed Management.</b> The Cedar River watershed is owned by the City of Seattle and managed to provide clean water for a municipal water supply. Management of the watershed has prohibited development of the area, as well as severely restricted the presence of impervious surfaces. Under the Cedar River HCP, the watershed forests area protected from commercial logging until 2050 (although ecological and restoration thinning are permitted to advance the seral stage of the forest in previously logged areas). The HCP also calls for road decommissioning, which reduces sedimentation and mass wasting associated with improper road drainage. Collectively, management of the watershed should protect and enhance riparian and aquatic habitats for Chinook salmon, along with other fish and wildlife species. |              |                          | <b>H</b>                    | <b>H</b>          |

**Reach 19: Cedar River from Landsburg Dam (RM 21.7) to RM 22.2****Restoration**

**Technical Hypothesis:** *Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.*

| Project # | Reach # | Reach Restor. Benefit Rank | NTAA # | NTAA Name & Description  | Approx. Cost | Notes, Key Uncertainties  | Benefits to Chinook H, M, L | Feasibil. H, M, L |
|-----------|---------|----------------------------|--------|--|--------------|---|-----------------------------|-------------------|
| C304      | 19      | n/a                        | new    | <b>Habitat Enhancement of Landsburg Impoundment Pool:</b> Create cover for juvenile salmon in the pool behind Landsburg Dam through installing wood and/or rock structures and vegetation.   |              | Many juvenile salmon are using this area. Need to be sure that cover does not encourage predators, perhaps through focusing actions in very shallow water.  | <b>L</b>                    | <b>H</b>          |
| C305      | 19      | n/a                        | new    | <b>Installment of Engineered Log Jams:</b> Install large wood jam(s), upon which logs comes down the river will be captured, near RM 22. Intent is to both build habitat complexity and protect Landsburg Dam from debris build-up and damage from debris. This will reduce the need to remove the debris material from in front of the dam. |              | This project would depend upon the LWD survey and additional plan outcomes. This project would need to include a risk analysis for facility protection, as well as consider the benefits of a large wood jam for small (juvenile) fish (compared with providing cover for larger predatory fish). | <b>L</b>                    | <b>M</b>          |
| C306      | 19      | n/a                        | new    | <b>Reforestation of Right Bank:</b> Revegetate the right bank of the river, between the river and the access road.   |              | Need to consider facility maintenance activities. This area was partially planted, but more could be added.   | <b>L</b>                    | <b>H</b>          |

**Reach 20: Cedar River from RM 22.2 to RM 23.9****Restoration****Technical Hypothesis:** *Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.*

| Project # | Reach # | Reach Restor. Benefit Rank | NTAA # | Name & Description   | Approx. Cost | Notes, Key Uncertainties  | Benefits to Chinook H, M, L | Feasib. H, M, L |
|-----------|---------|----------------------------|--------|--|--------------|---|-----------------------------|-----------------|
| C307      | 20      | n/a                        | new    | <b>Rock Structure Installation:</b> Install rock structures to create flow refuges for juvenile fish.  |              | This was a spawning reach for coho salmon in 2003. Need to make sure that structures are sized for small fish and not larger trout and other potential predators. Also need to consider rocks versus wood as the appropriate material to use for cover. | <b>M</b>                    | <b>M</b>        |
| C308      | 20      | n/a                        | new    | <b>Road Decommissioning and Improvement:</b> Decommissioning of roads in the Rock Creek basin. This should reduce sedimentation reaching the mainstem and improve substrate conditions.  |              |   | <b>L</b>                    | <b>H</b>        |
| C309      | 20      | n/a                        | new    | <b>Confluence Restoration of Rock Creek:</b> Rock Creek is one of the largest tributaries to the Cedar River in the upper watershed with a large area accessible to fish. The creek has a high chance of being used by coho, and Chinook to a lesser degree. Restoration at the mouth of Rock Creek would mainly include vegetation enhancement and structure addition (wood). |              |   | <b>M</b>                    | <b>M</b>        |

**Reach 21: Cedar River from RM 23.9 to Barneston Bridge (RM 29.3 - just downstream of Taylor Creek)****Restoration****Technical Hypothesis:** *Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.*

| Project # | Reach # | Reach Restor. Benefit Rank | NTAA # | NTAA Name & Description   | Approx. Cost | Notes, Key Uncertainties | Benefits to Chinook H, M, L | Feasib. H, M, L |
|-----------|---------|----------------------------|--------|---|--------------|--------------------------|-----------------------------|-----------------|
| C310      | 21      | n/a                        | new    | <b>Road Decommissioning and Improvements:</b> Abandon roads and improve important transportation roads to reduce sedimentation to the river. Focus on those roads adjacent to the river and subject to erosion. |              |                          | <b>M</b>                    | <b>M</b>        |

**Reach 22: Cedar River from Barneston Bridge (RM 29.3 - just downstream of Taylor Creek) to RM 31.4****Restoration****Technical Hypothesis:** *Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.*

| Project # | Reach # | Reach Restor. Benefit Rank | NTAA # | NTAA Name & Description   | Approx. Cost | Notes, Key Uncertainties   | Benefits to Chinook H, M, L | Feasibil. H, M, L |
|-----------|---------|----------------------------|--------|---|--------------|--|-----------------------------|-------------------|
| C311      | 22      | n/a                        | new    | <b>Road decommissioning:</b> Road decommissioning (roads 33, 60, 80) in the Taylor and Williams Creek basins to reduce the amount of sediment from road failures that affect the mainstem Cedar.  |              |  | <b>L</b>                    | <b>H</b>          |
| C312      | 22      | n/a                        | new    | <b>Confluence Restoration of Taylor Creek:</b> Taylor Creek is the largest tributary to the Cedar River in the upper watershed, with about 0.5 mile of habitat accessible to fish (natural barrier). The creek has a high chance of being used by coho and Chinook. Restoration at the mouth of Taylor Creek would mainly include vegetation enhancement and structure addition (wood). |              |  | <b>M</b>                    | <b>M</b>          |
| C313      | 22      | n/a                        | new    | <b>Lower Taylor Creek Railroad Trestle and Road 9 Bridge Removal/replacement:</b> The railroad trestle and Road 9 bridge confine the lower portion of Taylor Creek, which is accessible to salmon. This project would remove the railroad bridge and remove or reconstruct the Road 9 bridge to open up and increase the attractiveness of 0.5 mile of large stream habitat.            |              | This project should be considered with any Road 9 improvements. The bridge is creosote treated, presenting water quality concerns. Benefit from this project would increase as fish numbers in the river increase. | <b>M</b>                    | <b>H/M</b>        |

**Reach 23: Cedar River from RM 31.4 to RM 31.5****Restoration****Technical Hypothesis:** *Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.*

| Project # | Reach # | Reach Restor. Benefit Rank | NTAA # | NTAA Name & Description  | Approx. Cost | Notes, Key Uncertainties   | Benefits to Chinook H, M, L | Feasibil. H, M, L |
|-----------|---------|----------------------------|--------|--|--------------|--|-----------------------------|-------------------|
| C314      | 23      | n/a                        |        | <b>Road Decommissioning and Improvement and Steele Creek Bridge Improvement:</b> This reach has roads adjacent to the river which contribute sediment (through erosion) directly to the river. Roads that should be considered for improvement include Road 10, 20 and 12. The Steele Creek bridge should be reconstructed at the same time as any road improvements. The bridge should be improved to reduce riparian confinement, and coupled with efforts to stabilize the stream banks through revegetation and other riparian enhancements. |              | Potentially the 10 Road could be decommissioned from the 20 to the 12 road, and the latter roads could be improved to replace the 10 Rd as core road. The 20 Road crossing over Steele Creek also needs improvement. | <b>M</b>                    | <b>H</b>          |

**Reach 24: Cedar River from RM 31.5 to RM 32.9****Restoration****Technical Hypothesis:** *Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.*

| Project # | Reach # | Reach Restor. Benefit Rank | NTAA # | NTAA Name & Description  | Approx. Cost | Notes, Key Uncertainties  | Benefits to Chinook H, M, L | Feasibil. H, M, L |
|-----------|---------|----------------------------|--------|--|--------------|---|-----------------------------|-------------------|
| C315      | 24      | n/a                        | new    | <b>Road Decommissioning and Improvements:</b> Abandon roads and improve important transportation roads to reduce sedimentation to the river. Focus on those roads adjacent to the river and subject to erosion.  |              |   | <b>L</b>                    | <b>M</b>          |
| C316      | 24      | n/a                        | new    | <b>Riparian Enhancement:</b> Enhance riparian conditions on the south side of the river, adjacent to Road 9. Enhancement should occur through adding vegetation and conducting ecological thinning to advance the seral stage of the riparian forest to provide improved wood recruitment, riparian food sources, and cover. |              | Ecological thinning is poorly understood by the environmental community, although it is an important action for encouraging the development of large trees in areas that have been previously logged and are dominated by dense, young forest stands. Benefits for Chinook from riparian enhancements would increase over time as the vegetation grows/matures. | <b>M/L</b>                  | <b>H</b>          |

**Reach 25: Cedar River from RM 32.9 to RM 33.2****Restoration****Technical Hypothesis:** *Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.*

| Project # | Reach # | Reach Restor. Benefit Rank | NTAA # | NTAA Name & Description   | Approx. Cost | Notes, Key Uncertainties  | Benefits to Chinook H, M, L | Feasibil. H, M, L |
|-----------|---------|----------------------------|--------|---|--------------|---|-----------------------------|-------------------|
| C317      | 25      | n/a                        | new    | <b>Road Decommissioning and Improvements:</b> Abandon roads and improve important transportation roads to reduce sedimentation to the river. Focus on those roads adjacent to the river and subject to erosion.   |              | An evaluation will need to be conducted to determine sediment contribution rates, costs, and need for access.       | <b>L</b>                    | <b>M</b>          |
| C318      | 25      | n/a                        | new    | <b>Facilitate Instream Pool Structure, Habitat diversity, and Floodplain Connections:</b> This area has high rearing potential as a redd in 2003 was located just downstream. However, maintaining the wetted channel can be difficult due to the depositional nature of the reach and powerhouse operations affecting flows. Increasing pools and habitat diversity would provide additional rearing opportunities in this area. |              | Benefits will depend on fish use of the area. Projects will need to consider the highly variable flows in the area. | <b>M/L</b>                  | <b>?</b>          |

|      |    |     |     |  |  |   |     |   |
|------|----|-----|-----|--|--|---|-----|---|
| C319 | 25 | n/a | new | <b>Riparian Enhancement:</b> Enhance riparian conditions on both sides of the river. Enhancement should occur through adding vegetation and conducting ecological thinning to advance the seral stage of the riparian forest to provide improved wood recruitment, riparian food sources, and cover. |  | Ecological thinning is poorly understood by the environmental community, although it is an important action for encouraging the development of large trees in areas that have been previously logged and are dominated by dense, young forest stands. Benefits for Chinook from riparian enhancements would increase over time as the vegetation grows/matures. | M/L | H |
|------|----|-----|-----|--|--|---|-----|---|

## Reach 26: Cedar River from RM 33.2 to Cedar Falls Powerhouse (RM 33.7)

### Restoration

**Technical Hypothesis:** Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.

| Project # | Reach # | Reach Restor. Benefit Rank | NTAA # | NTAA Name & Description   | Approx. Cost | Notes, Key Uncertainties  | Benefits to Chinook H, M, L | Feasibil. H, M, L |
|-----------|---------|----------------------------|--------|---|--------------|---|-----------------------------|-------------------|
| C320      | 26      | n/a                        | new    | <b>Road Decommissioning and Improvements:</b> Abandon roads and improve important transportation roads to reduce sedimentation to the river. Focus on those roads adjacent to the river and subject to erosion.   |              | An evaluation will need to be conducted to determine sediment contribution rates, costs, and need for access.   | L                           | M                 |
| C321      | 26      | n/a                        | new    | <b>Facilitate Instream Pool Structure, Habitat Diversity, and Floodplain Connections:</b> This area has high rearing potential as a redd in 2003 was located just downstream. However, maintaining the wetted channel can be difficult due to the depositional nature of the reach and powerhouse operations affecting flows. Increasing pools and habitat diversity would provide additional rearing opportunities in this area. |              | Benefits will depend on fish use of the area. Projects will need to consider the highly variable flows in the area.   | M/L                         | ?                 |
| C322      | 26      | n/a                        | new    | <b>Riparian Enhancement:</b> Enhance riparian conditions on both sides of the river. Enhancement should occur through adding vegetation and conducting ecological thinning to advance the seral stage of the riparian forest to provide improved wood recruitment, riparian food sources, and cover.  |              | Ecological thinning is poorly understood by the environmental community, although it is an important action for encouraging the development of large trees in areas that have been previously logged and are dominated by dense, young forest stands. Benefits for Chinook from riparian enhancements would increase over time as the vegetation grows/matures. | M/L                         | H                 |

**Reach 27: Cedar River from Cedar Falls Powerhouse (RM 33.7) to RM 34.1****Restoration****Technical Hypothesis:** *Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.*

| Project # | Reach # | Reach Restor. Benefit Rank | NTAA # | NTAA Name & Description   | Approx. Cost | Notes, Key Uncertainties | Benefits to Chinook H, M, L | Feasibil. H, M, L |
|-----------|---------|----------------------------|--------|---|--------------|--------------------------|-----------------------------|-------------------|
| C323      | 27      | n/a                        | new    | <b>Road Decommissioning:</b> Decommission Road 71, a major source of sedimentation in this area.                        |              |                          | <b>M/L</b>                  | <b>H</b>          |
| C324      | 27      | n/a                        | new    | <b>Maintain Flow Commitments:</b> Maintain HCP-guaranteed flows in this reach (between Masonry Dam and the powerhouse). |              | Included in the HCP.     | <b>H</b>                    | <b>H</b>          |

**Reach 28: Cedar River from RM 34.1 to Lower Cedar Falls (RM 34.3)****Restoration****Technical Hypothesis:** *Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.*

| Project # | Reach # | Reach Restor. Benefit Rank | NTAA # | Name & Description                       | Approx. Cost | Notes, Key Uncertainties | Benefits to Chinook H, M, L | Feasibil. H, M, L |
|-----------|---------|----------------------------|--------|--|--------------|--------------------------|-----------------------------|-------------------|
|           | 28      | n/a                        |        | No projects are identified at this time. |              |                          |                             |                   |

**Reach 29 - Rock Creek (upper)****Restoration****Technical Hypothesis:** *Continue to implement restoration activities identified in the City of Seattle's Cedar River Habitat Conservation Plan.*

| Project # | Reach # | Reach Restor. Benefit Rank | NTAA # | NTAA Name & Description   | Approx. Cost | Notes, Key Uncertainties  | Benefits to Chinook H, M, L | Feasibil. H, M, L |
|-----------|---------|----------------------------|--------|---|--------------|---|-----------------------------|-------------------|
| C325      | 29      | n/a                        | new    | <b>Rock Creek LWD Placement:</b> Place LWD in creek, 27 reaches of 100 m, total of 2700m of wood placement.   |              | 200 m has been completed.   | <b>M</b>                    | <b>H</b>          |
| C326      | 29      | n/a                        | new    | <b>Restoration of Walsh Ditch Flows into Rock Creek:</b> Walsh Ditch was originally created to divert Walsh Lake flows downstream of the supply intake at Landsburg (due to the Taylor town site and mining in the vicinity). The ditch experiences periodic "blowouts" which cause tremendous turbidity and sediment impacts to Rock Creek and the mainstem river. This diversion also restricts access to Walsh Lake and its tributaries. This project would restore the historical hydrology of Rock Creek, which may benefit Chinook to significant extent by increasing flows to level more likely to be recolonized by chinook. It will also allow access to high quality spawning and rearing habitat areas (coho primarily) above the current Walsh Lake diversion. |              | The feasibility of placing Walsh ditch flows back into Rock Creek is being assessed currently. The outcome of that study will inform feasibility of the project. If this project was implemented, the Road 41 bridge would need to be improved/reconstructed. | <b>M</b>                    | <b>?</b>          |

|      |    |     |     |   |  |  |     |   |
|------|----|-----|-----|---|--|--|-----|---|
| C327 | 29 | n/a | new | <b>Road 41 Bridge Project:</b> The road 41 bridge is a wood stringer bridge located just above the confluence of Rock Creek with the mainstem river. The bridge has low clearance over the creek and currently confines the stream and restricts wood passage. This project would reconstruct the bridge to meet flood flow and debris passage after Walsh Lake Ditch flow are added to Rock Creek.               |  | This project would have to occur if Walsh flows were rediverted into Rock Creek.   | H/M | M |
| C328 | 29 | n/a | new | <b>Riparian Enhancement:</b> Enhance riparian conditions through adding vegetation (underplanting), snag creation and conducting ecological thinning to advance the seral stage of the riparian forest to provide improved wood recruitment, riparian food sources, and cover.  |  |  | M/L | M |
| C329 | 29 | n/a | new | <b>Restoration of Taylor Ditch Flows into Rock Creek:</b> Taylor Ditch was constructed to carry poor quality water out of the watershed. The ditch restricts access to stream areas in Webster Creek, a main tributary to Walsh Lake. This project will primarily increase spawning habitat for coho but will also increase flows in Rock Creek, an area that Chinook may use, particularly in the lower reaches. |  | The feasibility of placing Taylor ditch flows back into Rock Creek is being studied. The outcome of that study will inform feasibility of the project. | L   | ? |